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GRAYMONT

December 19, 2007

Ms. Susan M. White
Department of Natural Resources
Division of Oil, Gas, and Mining
Mining Program Coordinator - Minerals Regulatory Program
1594 West North Temple, Suite 1210
PO Box 145801
Salt Lake City, UT 84114-5801

Re: Response to Review of Amended Notice of Intention to Commence Large Mining Operations, Graymont Western US, Inc. (Graymont), Big Sage, M/027/006, Task ID# 1826, Millard County, Utah.

Dear Ms. White:

Graymont Western US, Inc. is submitting the following responses to a review made by the Division of Oil, Gas, and Mining (DOGM) concerning Graymont's Amended Notice of Intention (NOI) for the Big Sage Quarry.

Changes from the first submission of this amendment are shown in redline-strikeout format. Only the sections that have changed or have been added are included in this submission. Baseline studies and cultural studies have not been reproduced. Upon acceptance from DOGM, clean, complete copies of the permit will be submitted in three-ring binders. A "Working Copy" of the re-submitted sections has been included for your convenience.

R647-4-105 - Maps, Drawings & Photographs

105.1 Topographic base map, boundaries, pre-act disturbance
Please show the permitted and bonded area on all figures and describe in the legend. This includes Figures 2, 3, and 7. (TM)

Bonded areas have been added to the figures and described in the figure legends.

105.2 Surface facilities map
Figure 5: Will there be a materials and equipment storage yard (other than ANFO)? If not, why? Are there parking areas? Please show them. Where is waste stored? Please show. Please show the location of drainage control structures. How is wastewater being managed? Please show if applicable. If not, indicate so. Show the power line(s). (BE)

Figure 6 shows the Big Sage conceptual facility layout. The conceptual locations for the parking area, drainage control structures, "bone yard", and the power line were added to the figure.

Used tires, scrap lumber, etc. will be stored in the "bone yard" within the Facility Area. Waste piles will be placed to avoid environmental impacts. Waste materials will be removed at closure and disposed of in an approved off-site landfill.

At the truck washing station, a catch basin and oil sump will be constructed to collect oil washed from the vehicles. Gray water from the washing station will be evaporated in the catch basin, and separated oil will be collected and removed by a licensed contractor. The conceptual truck washing station location is shown in Figure 6.

105.3 **Drawings or Cross Sections (slopes, roads, pads, etc.)**
Cross-sections of the waste piles and overburden piles are shown on Figure 4. Please show where they are found on Figure 3. (TM)

Locations of cross-sections shown in Figure 5 were added to Figure 3 and Figure 9.

What is the expected maximum depth of the north overburden/fines pile? Does figure 4 represent the 'norm'? Since it is adjacent to the quarry, will there be a change in elevation between this area and the quarry? Please explain and provide more information. This statement applies to the central overburden pile as well. Will the elevation of this pile be higher than the quarry? (BE)

Figure 5 shows conceptual cross-sections of the North Overburden/Fines Pile and the Central Overburden/Fines Pile in relation to the quarries. Overburden/fines piles heights and quarry depths are also illustrated in Figure 5 and described in Table 2-2.

A geologic map should be submitted. See 106.8. (BE)

A site geology and ore characteristics section has been added to the text (Section 2.2), and a simplified geology map has been added (Figure 4).

The map Conceptual Reclamation Map, figure 7, is deficient and requires more detail to understand the reclamation intent. Please identify the location and extent of the reclamation work to be accomplished. Identify flows, ephemeral stream channels and life of mine-disturbed area. This list is not all-inclusive, but informational enough to establish a basis for the map. Figure 7, conceptual reclamation map does not show (or they are not

referenced) these mentioned specifics. This map should show the areas that will be contoured, regraded, resoiled, filled, ripped/scarified and seeded including acres. On another reclamation map show the location of culverts, power lines, pipelines, deleterious storage sites (with dimensions), water storage, location of concrete rubble, and show the conveyor labeled by section. In addition, ensure there is an appropriate legend and identify the contour elevations. (BE)

Figure 9 Conceptual Reclamation Map has been modified to show ephemeral drainages, location and extent of reclamation work to be accomplished, areas that will be revegetated, and contours. A legend has been included. Reclamation acres are shown in Table 4-2 Soil Quantities.

Facilities, such as culverts, pipelines, and concrete rubble, will either be removed from the site or buried in place as described in Section 4.6.4.

Figure 3 does not show any roads leading into/out of the topsoil stockpile area or the fines piles. Is that accurate? The legend appears to be incomplete, as there are dashed lines, which are not on the legend. There are no elevation lines on Figure 3. Please update. Provide more detailed information regarding drainages and erosion control, which may be submitted on a separate map. Show and identify perennial, intermittent, and ephemeral locations. See 107.3 (BE)

Figure 3 has been modified to show a conceptual interior road leading into/out of the topsoil stockpile area. The overburden/fines piles will be accessed via benches.

The legend has been modified to indicate that the dashed lines represent conceptual interior roads.

Elevations in Figure 3 have been labeled.

Figure 7 Conceptual Stormwater Management Map has been added and shows drainages and erosion control features as well as ephemeral drainages.

Provide cross sections of mining highwall(s) in the North and South Quarry area. (BE)

Figure 5 shows conceptual cross-sections of the North Overburden/Fines Pile and the Central Overburden/Fines Pile in relation to the quarries. Overburden/fines

piles heights and quarry depths are also illustrated in Figure 5 and described in Table 2-2.

Provide drawing showing the intersections between the quarry area(s) and the pile areas. (BE)

Figure 5 shows conceptual cross-sections of the North Overburden/Fines Pile and the Central Overburden/Fines Pile in relation to the quarries. Overburden/fines piles heights and quarry depths are also illustrated in Figure 5.

R647-4-106 - Operation Plan

General comments:

As an overview, the Division expects an ultimate pit mine plan, general production sequence, pit slope design sectors and geotechnical basis, geologic map with major structures, joint sets, bedding etc., pit dimensions (i.e. width, length, depth), plan of pit roads, dump points, stockpiles etc. (BE)

A brief description of the mining sequence was added to Section 2.4.1 Quarries.

Quarry slopes will be 1H:1V or shallower. Section 2.4.2 Slope Stability was modified to include a geotechnical basis for slope stability at Big Sage.

Section 2.2 Site Geology and Ore Characteristics was added to the NOI text, and Figure 4 Simplified Geology Map was added.

Table 2-2 was added to demonstrate general component dimensions and capacities, and figures 3 and 5 illustrate general component dimensions.

Quarry contours shown in Figure 3 indicate the location of quarry roads.

106.2 Type of operations conducted, mining method, processing etc. There is mention of the diesel fuel, gasoline and oil being stored on-site, how are they handled? Are there any processing chemicals on site? If so, how are they handled? (BE)

Section 2.4.14 discusses handling of diesel fuel, gasoline, and oil. Diesel fuel, gasoline, and oil will be handled in accordance with industry standards as well as state and federal regulations.

Current processing plans do not include the use of processing chemicals at the Big Sage Project.

A chemical dust suppressant, such as magnesium chloride, will be applied to the access and haul roads at intervals specified by the air quality permit. Any chemicals utilized for dust control will be handled in accordance with industry standards and applicable state and federal regulations.

How high are the highwalls and how will they be constructed (orientation relative to strike/dip etc)? What is the maximum bench face angle and interslope angle. How will the pit be designed to manage drainage? What is the elevation of the floor of the pit? The top elevation? What factors determine the location of the internal drainage ditches? Figure 3 does not show haul roads within the quarry areas. There are no elevations marked on the topo lines. Is the mining approach one where haul roads will be removed as mining progresses? Please explain. Is the highwall benched? Please provide detail. Cut widths appear inadequate for conventional mining practices. Please provide more information and explanation. Show how the fines piles are being accessed. (BE)

No highwalls, slopes exceeding 45 degrees and not including quarry benches, are anticipated at the Big Sage quarries during operation or after reclamation. Slopes for the Big Sage quarries were designed on the basis of bedding orientation and economic cutoff for overburden. The quarry slope along the footwall will be approximately parallel to the bedding orientation, which generally ranges from 15 to 20 degrees. Where the hanging wall thickness exceeds the economic cutoff, the slope will be mined at approximately 45 degrees.

Bench faces in the quarries will typically be 20 feet to 40 feet high, and minimum bench width will be about 25 feet but will typically be much wider. Minimum bench width is dictated by equipment operating requirements. Bench face angles will typically be vertical. Quarry slopes will be constructed roughly parallel to the strike of the deposit and will be up to 620 feet high.

The Big Sage North Quarry Area will have a crest elevation of 6,040 feet amsl and a quarry floor of 5,480 feet amsl. The Big Sage South Quarry Area will have a crest elevation of 6,200 feet amsl and a quarry floor of 5,580 feet amsl.

Rain water or snowmelt in the quarries either soaks into the ground or forms puddles on the quarry floor. The puddles either evaporate or soak into the ground. The quarry floors will be relatively flat and will be gently sloped to prevent storm water from leaving the quarry areas. In addition, berms will be constructed along the outer edge of the quarry floors, which will prevent storm water from leaving the quarry areas.

Contours in Figure 3 illustrate conceptual locations of haul roads within the quarry areas, which are subject to change as mining progresses.

Figure 3 has been updated to show elevations on contour intervals.

The overburden/fines piles will be accessed via benches. Figure 6 shows conceptual interior roads that will be used to access the fines piles and the quarry areas.

Determine the safe location of topsoil stockpiles with a narrative to include: protection against wind and water erosion, sediment control, dust generation, unnecessary compaction and contamination by noxious weeds, invasive species or other undesirable materials. (BE)

Section 2.4.7 discusses protection of the topsoil stockpile from wind and water erosion, sediment control, dust generation, and contamination by noxious weeds, invasive species, or other undesirable materials.

The topsoil stockpile will be constructed over an existing ephemeral drainage. To divert storm water runon around the topsoil stockpile, berms will be constructed between the quarry area and the topsoil stockpile as shown in Figure 7. Storm water will flow around the topsoil stockpile and into natural drainages. Berm dimensions will vary with topography.

Provide information about the intersection area between the quarry areas and the stockpile areas. Address how stability will be maintained between them? (BE)

The areas between the quarry and the overburden/fines piles are illustrated in Figure 5. Due to the relationship of the overburden/fines piles configurations with the quarry configurations shown in Figure 5 as well as shallow slopes (35 degrees or less for the overburden/fines piles and less than 45 degrees for the quarry slopes), the area between the overburden/fines piles and the quarry will be stable.

Please indicate the quantity of 20,000-gallon water tanks that will be on-site. (BE)

Three 20,000-gallon water tanks will be located on-site.

Please indicate the quantity and size of the gasoline and diesel fuel tanks. (BE)

There will be containment that will facilitate up to 40,000 gallons of diesel-fuel in one or more tanks, and one gasoline fuel tank, 500 gallon capacity.

Ensure the area around the explosives magazine is clear of any trash and vegetation. Place appropriate warning signs in the vicinity. Please include this type of information in the submittal. (BE)

Explosives will be stored and used in accordance with Mine Safety and Health Administration and Bureau of Alcohol, Tobacco, and Firearm regulations.

Provide information and outline the limiting factors regarding the bench width range in the quarries. (BE)

Minimum bench widths are dictated by equipment operating requirements.

106.5 Existing soil types, location, amount
In Section 4.7, the plan says sodic soils were not observed although SCS data indicated that these soils may be present.

What observations were made to determine that sodic soils are not present? Were any of the soils analyzed for electrical conductivity or sodium adsorption ratio? (PBB)

Sodic soils are located in the Big Sage Valley but are not present within the disturbance area. A soil survey of the disturbance area did not identify any sodic soils; therefore, testing for electrical conductivity or sodium adsorption ratio was not conducted.

106.6 **Plan for protecting & redepositing soils**
Explain how flow will be directed away from the topsoil stockpile. How will flow and sediments be managed in this area? (BE)

The topsoil stockpile will be constructed over an existing ephemeral drainage. To divert storm water runon around the topsoil stockpile, berms will be constructed between the quarry area and the topsoil stockpile as shown in Figure 7. Storm water will flow around the topsoil stockpile and into natural drainages. Berm dimensions will vary with topography.

What is the maximum height and angle of the topsoil stockpile(s)? What is the maximum anticipated volume? (BE)

Table 2-2 provides the estimated topsoil stockpile capacity (appx. 0.43 M cy). The maximum height will b~ approximately 120 feet. The maximum angle of the topsoil stockpile will be between 35 and 38 degrees.

The plan says salvageable soil will be removed and stockpiled and that salvageable soil is defined as any surface material presently supporting plant growth with a thickness exceeding six inches. Please modify this portion of the plan to mimic the regulations which say (R647-4-107.5) suitable soil material shall be removed where practical so as to be available for reclamation. Six inches may be a practical limit for some areas, but it may be possible to salvage smaller quantities of soil in other areas. (PBB)

Section 2.4.7 has been revised to state the following:
"Salvageable soil, including surface vegetation, will be removed and stockpiled within the areas for disturbance. Suitable soil material will be removed, where practical, so as to be available for reclamation. Salvageable soil is defined as any surface material that is presently supporting plant growth. Past experience at Cricket Mountain indicates that the practical minimum thickness for salvageable soil is six inches. Graymont will use equipment from their on-site fleet to salvage topsoil; this equipment will include but not be limited to D8-class dozers, loaders, and haul trucks."

The plan says Graymont will request a variance to leave quarry benches and floors unvegetated if sufficient growth media resources are not available. Rather than potentially requesting a variance for topsoil replacement and/or vegetation establishment on areas that have been previously disturbed, the Division suggests applying soil over as many reclaimed areas as possible, even if this means reducing the amount of soil applied in some areas. The Division has found that even very small quantities of topsoil—one or two

inches—can dramatically increase the amount of vegetation. The Division will only consider a variance request at some point in the future if all other options have been examined, including the possibility of using substitute material, such as amended fines. (PBB)

As per a discussion with Paul Baker on September 13, 207, minimum growth media placement of six inches was agreed upon.

106.8 **Depth to groundwater, extent of overburden, geology**
Please show the location of any wells and identify them on the map called figure 3. A narrative description of the area geology and a geologic cross section is required. Since the source of the water supply is mentioned, please show this location on a map. (BE)

An existing well near the Cricket Mountain Plant currently supplies water for the mining operations and processing facilities. The Plant location is labeled on Figure 2.

Section 2.2 Site Geology and Ore Characteristics has been added to the NOI.

106.9 **Location & size of ore, waste, tailings, ponds**
Please elaborate on the central fines pile regarding the north portion of the pile that is parallel to the fee land. There does not appear to be any margin for access, failure etc. The possibility exists that an event could occur that would cause disturbance outside the Graymont fee land. If the permit boundary is different than the Graymont fee land boundary, please show (which may or may not be the permit boundary, see 105.1). (BE)

Surface disturbance calculations include a buffer zone around each component to account for access and unforeseen disturbance requirements.

Highwalls are mentioned, however there is no indication of bench face angle or bench height. Please provide a more detailed narrative about the highwall design and management. Please be specific. (BE)

Quarry slopes will be constructed at 1H:1V or shallower. Bench faces in the quarries will typically be 20 feet to 40 feet high, and bench face angles will typically be vertical.

Please provide more detail about the location of culverts on the access road. If there are none, please indicate. No blocking or restrictions that impede drainage or adversely affects the road should occur, please provide verbiage containing this information. (BE)

The access road is authorized under other actions. Graymont has been granted an easement (#1246) by State of Utah School and Institutional Trust Lands Administration (SITLA) for the sections of the Big Sage Access Road that cross state lands. A right-of-way approval, which included BLM land along the alignment, is pending.

To avoid excess land disturbance, access road considerations should include that vegetation may be cleared only for the essential width necessary for road and associated ditch construction and to serve traffic needs. Please indicate this action will be taken. (BE)

See above response to comment.

Please provide information about how road dust will be controlled. (BE)

Section 2.4.19 Emission Control addresses methods for controlling dust.

Please provide information regarding who is required to maintain the access roads and describe a basic maintenance plan. (BE)

The access road is authorized under other actions. Graymont has been granted an easement (#1246) by State of Utah School and Institutional Trust Lands Administration (SITLA) for the sections of the Big Sage Access Road that cross state lands. A right-of-way approval, which included BLM land along the alignment, is pending. The access road will be maintained in accordance with existing authorizations.

Describe in more detail what appropriate physical barriers are that will placed around the project area. (BE)

Section 2.4.16 Safety and Site Control addresses the physical barriers that will be placed around the Project Area.

106.10 Amount of material to be moved
In a table format please provide the quantity of material to be extracted, moved, proposed to be moved. Material includes: topsoil, mineral deposit, subsoil, overburden, waste rock, or core hole material. (BE)

Table 2-2: Component Capacity Summary provides the amount of material to be moved, including topsoil, ore, overburden, and fill material.

R647-4-107 - Operation Practices

107.1 Public safety & welfare

107.1.14 Posting warning signs
Indicate that warning/hazardous area signs will be placed where highwalls are located. The placement(s) shall be in a location that is visible from more than one viewpoint. If there are areas that are an exception to this, multiple signs will be placed. Please provide this type of information. (BE)

Section 2.4.16 Safety and Site Control has been revised to include the following text:

"Warning signs will be placed where quarry slopes are located. The placement of the warning signs will be in a location that is visible from more than one viewpoint, and multiple signs will be

placed in areas where signage would not be visible from more than one viewpoint. Warning signs will be easy to read and easy to understand."

107.1.15 **Constructing berms, fences, etc. above highwalls**
Indicate that berms and/or fences will be placed above highwalls. Provide a berm design and indicate the source of berm materials. (BE)

Berms or boulders will be used to restrict access to quarry slopes. Quarry materials will be used to create rock berms, where feasible. Berms will be constructed in accordance with MSHA regulations.

107.2 **Drainages to minimize damage**
Please show the final drainage pattern and area on the conceptual reclamation map. On page 24 of the plan you state "through careful control of water runoff". Please elaborate by showing watersheds and channel designs. (TM)

Water runoff will be controlled by utilizing berms, storm water diversion ditches, and evaporation ponds.

Storm water berms in the topsoil stockpile area will be reclaimed, and a swale will be excavated in the location of the pre-mining ephemeral drainage. The swale will be excavated to approximate pre-mining topography, and the swale will be constructed in such a manner as to be stable during normal precipitation and snowmelt events. Pre-mining flow patterns will not be returned to the original state, but the storm water controls will be constructed in such a manner that the drainages will be stable.

Post-mining topography will be constructed so that features created by mining operations, such as the overburden/fines piles, will be stable. Benches will be included in reclaimed features. During reclamation, sloped surfaces having the potential to experience accelerated erosion will be contour furrowed.

Identify and explain how adjacent ephemeral washes, flows and run off will be managed. What type of sediment control systems will be utilized? (BE)

Figure 7 identifies ephemeral drainages within the Project Area and illustrates conceptual storm water control locations. Section 2.4.17 Storm Water Management has been added to the text to provide a narrative describing storm water controls that will be implemented, and Section 2.4.18 Erosion and Sediment Control has been modified to describe Best Management Practices that will be used to limit erosion and reduce sediment in precipitation runoff from Project components and disturbed areas during construction and operations.

107.3 **Erosion control & sediment control**
Please include a copy of your Stormwater Pollution Prevention Plan (SWPPP), approved by the Division of Water Quality, Storm Water

Program. You can access their permits and regulations through http://www.waterquality.utah.gov/UPDES/stormwatercon.htm. **(TM)**

A copy of the Storm Water Pollution Prevention Plan is included in Appendix A of the NOI.

Describe the proposed erosion control measures describing the application for practice. What are the influencing factors that contribute to using straw bales vs. rock and gravel cover. Describe the worst-case scenario, and provide an erosion control and sediment design for that case. Explain how a sediment flow incident will be managed. Show locations that may be affected on a map including a narrative. (BE)

Straw bales will be used in areas where temporary erosion and sediment control measures are installed while rock and gravel cover will be utilized on permanent erosion and sediment control features.

Figure 7 and Section 2.4.17 have been added to illustrate and describe conceptual storm water controls. Section 2.4.17 provides summary climatological and storm event data for the Big Sage Project.

Indicate how soon after a storm event the erosion control structures will be inspected. What is considered a large storm? How are mining highwalls managed in a storm event? (BE)

Sediment and erosion control measures will be visually inspected annually or as soon as practicable following large storm or runoff events. Storm event data is provided in Table 2-4 to indicate large storm events.

Quarry slopes will be less than 1H:1V, and the slopes will be benched as illustrated in Figure 5. Rain water or snowmelt in the quarries either soaks into the ground or forms puddles on the quarry floor. The puddles either evaporate or soak into the ground. The quarry floors will be relatively flat and will be gently sloped to prevent storm water from leaving the quarry areas. In addition, berms will be constructed along the outer edge of the quarry floors, which will prevent storm water from leaving the quarry areas.

107.4 Deleterious material safety stored or removed
Identify how deleterious materials in the form of sediment will be managed in a sediment flow event. (BE)

Deleterious materials in the form of sediment are not expected to exist at the Big Sage Project. Material that will be excavated in the quarry areas is a typical carbonate composition, and the major constituents are calcite, dolomite, and silica.

107.6 Concurrent reclamation
Address how un-utilized areas will be managed and kept in an environmentally sound manner. Describe how the dumps areas will be utilized, if concurrently, or one independently of another. (BE)

Concurrent reclamation reduces erosion, provides early impact mitigation and reduces final reclamation work. Graymont intends to optimize the amount of concurrent reclamation at the site. This will allow larger-scale testing of regrading, reclamation cover placement, and revegetation techniques. After storm events, project components will be inspected and evaluated to ensure that the components are maintained in an environmentally sound manner.

Overburden/fines piles will be utilized concurrently.

R647-4-109 - Impact Assessment

109.1 Impacts to surface & groundwater systems
Please include data or observations from the other operations describing on site hydrology and rainfall, storm events etc. (TM)

Graymont has measured precipitation at the Cricket Mountain Plant; precipitation measurements are summarized in Table 3-1.

109.4 Slope stability, erosion control, air quality, safety
Air quality permits may be required for certain mine operations, please reference any such permits. Describe in more detail measures that will be taken to minimize or mitigate impacts to slope stability, erosion, public safety and air quality. (BE)

Impacts to slope stability have been considered as outlined in Section 2.4.2, and appropriate mitigation measures are in place to limit impacts.

Due to the area climate (discussed in Section 2.4.17), area soil types, and BMPs that will be utilized to control erosion, no impacts are anticipated from erosional processes. BMPs to control erosion are presented in Section 2.4.18.

Direct impacts to air quality will include the short-term increase in fugitive dust from quarrying and hauling. Graymont will use BMPs to control fugitive dust as used in the existing operations. Methods for controlling fugitive dust, such as water application or chemical dust suppressant application on roads, are specified in the air quality permit (#2700004001), which is for the Cricket Mountain Project and will be modified to include the Big Sage Project. No indirect or residual impacts are projected to occur to air quality. Roads will be maintained as described in Section 2.4.6 and 2.4.19.

The Project configuration inherently limits impacts to public health and safety; the Project description includes safety measures that protect public health and safety. Risks have been identified, analyzed, and managed to ameliorate environmental issues associated with this Project. As described in Section 2.4.16, public access to the mining and haul road area will be limited to authorized individuals only. Appropriate signage will be erected and maintained to alert recreationalists, atv-riders, or other public of mining activities in the area. Warning signs will be highly visible, easy to read, and easy to understand.

There is not enough information in the plan to warrant the comment that slope stability in the quarry will not be affected. The mining

approach/method is unclear. There is no geologic map or substantive geologic narrative. (BE)

A geologic narrative has been added to the text (Section 2.2); a slope stability narrative has been added to the text; and a simplified geologic map has been added (Figure 4.)

There is limited information to conclude that there are no anticipated impacts from erosion. This type of statement requires substantiation. (BE)

Due to the area climate (discussed in Section 2.4.17), area soil types, and BMPs that will be utilized to control erosion, no impacts are anticipated from erosional processes. BMPs to control erosion are presented in Section 2.4.18.

What are the post reclamation slopes of the area? What is the slope angle of the 'unstable' areas how are the slopes monitored? Are they benched? Please identify these areas on figure 7. (BE)

In most cases, the final quarry slopes will range from seven to 25 degrees. There will be several locations where the hanging wall is exposed in which the average final quarry slope will be approximately 45 degrees. However, most of the areas where the slope is 45 degrees will be backfilled, and the slopes will be buried. The quarry slopes will be benched as shown in Figure 5. No unstable areas are anticipated.

Warning signs should be highly visible, easy to read and easily understood. English/Spanish versions should be considered. Signs that become faded and worn should be replaced. Please reference this information. (BE)

Appropriate signage will be erected and maintained to alert recreationalists, atv-riders, or other public of mining activities in the area. Section 3.8 was modified to include the following statement, "Warning signs will be highly visible, easy to read, and easy to understand."

R647-4-110 - Reclamation Plan

110.2 Roads, highwalls, slopes, drainages, pits, etc., reclaimed
No final reclamation of ephemeral drainage has been shown on Figure 7 and the final site drainage design needs to be described. (TM)

Figure 9 shows conceptual drainage of the post-mining site, and Section 4.6.5 Storm Water Controls describes the final site drainage.

How will surface water resources be managed to minimize adverse environmental impact? How is water run off 'carefully controlled'? Provide an explanation and a management plan. How will water control structures be managed? (BE)

Section 2.4.17 Storm Water Management has been added to the text.

Water runoff will be controlled by utilizing storm water berms, diversion ditches, and evaporation ponds.

Storm water controls in the topsoil stockpile area will be reclaimed, and a swale will be excavated in the location of the pre-mining ephemeral drainage. The swale will be excavated to approximate pre-mining topography, and the swale will be constructed in such a manner as to be stable during normal precipitation and snowmelt events. Pre-mining flow patterns will not be returned to the original state, but the storm water controls will be constructed in such a manner that the drainages will be stable.

Post-mining topography will be constructed so that features created by mining operations, such as the overburden/fines piles, will be stable. Benches will be included in reclaimed features. During reclamation, sloped surfaces having the potential to experience accelerated erosion will be contour furrowed.

Describe the erosion control plan for the angle of repose slopes of the overburden piles. What is the height of these areas? Provide a cross-section of these piles. (BE)

Overburden/fines piles have been constructed at angle of repose at other Cricket Mountain quarries, and these piles have been stable. The overburden/fines piles at Big Sage will be constructed in a similar manner to overburden/fines piles at other Cricket Mountain quarries and are expected to be stable.

Overburden/fines piles will be constructed to control runoff. Some puddles may form briefly on the top or on the west side of the Central Overburden/Fines Pile, but any collected runoff will either infiltrate or evaporate and may be beneficial for revegetation. Overburden/fines piles will be visually monitored following spring snowmelt and intense rain events to ensure that drainage and sediment control measures are effective.

The tops of the overburden/fines piles will be covered with a layer of soil and seeded. In some areas, the slopes on the overburden/fines piles will be left at angle of repose in an overall configuration which is stable. During reclamation, sloped surfaces having the potential to experience accelerated erosion will be contour furrowed. Slopes of the piles that are recontoured to an angle that is safe for equipment to work will be covered with a layer of soil and seeded.

Table 2-2 has been added to show the general dimensions and capacities of the project components. Cross-sections are provided in Figure 5, and reference locations are provided in Figure 3.

There is indication that a quarry highwall will remain, however there has not been a variance request submitted to the Division. (BE)

No highwalls, slopes exceeding 45 degrees and not including quarry benches, are anticipated at the Big Sage quarries during operation or after reclamation. In most cases, the final quarry slopes will range from seven to 25 degrees. There may be some locations where the hanging wall is exposed in which the average final quarry slope will be approximately 45 degrees. However, most of the areas

where the slope is 45 degrees will be backfilled, and the slopes will be buried. The quarry slopes will be benched as shown in Figure 5. No unstable areas are anticipated. Therefore, a variance request has not been submitted to the Division.

The Division expects all roads to be reclaimed, and will make exception closer to the beginning of reclamation. Figure 7 shows roads in place. (BE)

Figure 9 Conceptual Reclamation Map has been revised so that roads are not shown in place.

What agreement is there with the state for handling the access road? It is unclear in the narrative and on the map; figure 7, what the reclamation plan is. (BE)

The access road is authorized under other actions. Graymont has been granted an easement (#1246) by SITLA for the sections of the Big Sage Access Road that cross state lands. A right-of-way approval, which includes BLM land along the alignment, is pending. Post-reclamation use or reclamation will be determined based upon discussions with the BLM and with SITLA.

Describe how the final slope design(s) will be blended into the surrounding natural topography. (BE)

Section 4.6.3 Overburden/Fines Piles has been revised to state, "Final slopes will be blended into the surrounding natural topography, where practical."

Is any overburden dump material going to be used as backfill in the quarry? Is the overburden suitable for this purpose? (BE)

Portions of the quarry will be back-filled with overburden and fines. Material excavated from the quarry areas will be a typical carbonate composition, and the major constituents will be calcite, dolomite, and silica.

110.3 Description of facilities to be left (post mining use)
There is no narrative indicating that the concrete rubble will be buried. What is the volume of material? Where will it be placed? (BE)

Section 4.6.4 Buildings, Equipment, Piping, Scrap, Reagents, and Other Materials was added to the NOI. Concrete foundations and slabs, including re-bar, will be broken up using a track-hoe-mounted hydraulic hammer or similar methods and buried in place under approximately two feet of material in such a manner to prevent ponding and to allow vegetation growth. Re-bar will be sufficiently buried to prevent a safety hazard. After demolition and salvage operations are complete, the disturbed areas will be covered with growth media and seeded. Approximately 1,649 cubic yards of concrete foundations and slabs will be broken and buried in place as shown in the surety calculation.

Explain how the concrete structure re-bar is handled. (BE)

See above comment.

Indicate how the conveyor will be disposed of. Indicate the estimated scrap value. (BE)

Conveyors will be dismantled and salvaged or removed to an off-site landfill or other appropriate disposal site. Costs for dismantling the conveyors are included in the surety calculation. Estimated scrap value will not be determined as the scrap value will not be used to offset costs.

110.5 **Revegetation planting program**
Provide an outline of the revegetation monitoring and maintenance plan. Indicate detail such as hub location and a schedule. (BE)

Section 4.8.2 Mulching and Fertilization describes the experimental revegetation program from the Poison Mountain area. Revegetation will be conducted in a manner similar to the Poison Mountain area. Section 4.10 Monitoring describes the monitoring and maintenance plan for the Big Sage Area.

R647-4-111 - Reclamation Practices

General Comment regarding public safety and welfare: There is no information regarding any aspect of these provisions in the submittal, which is required by the Division. Division comments have been made as shown below, however, they are not all inclusive. Please take the time to review R647-4-111.1.11-15 and respond giving consideration to the statements that follow. (BE)

Section 4.11 Safety and Site Control was added to the text.

111.1 **Public safety & welfare**

1.12 **Disposal of trash & debris**
An environmentally responsible waste strategy plan should be developed and implemented. Each site is unique and requires individual characterization, with the treatment of waste and debris being no exception. If waste piles are created, they should remain on site for reasonable duration, and disposed of in an environmentally protective manner. Waste piles, should be placed to avoid environmental impacts. If there are recyclable materials, a separate area for the collection of these materials is suggested. Hazardous waste (i.e. combustible or flammable liquids), should be disposed of properly, and not mixed with the landfill waste. Explosive remnant (i.e. empty containers, paper and fiber packing materials) shall be disposed of according to manufacturer's instructions. Implement good house keeping procedures, which may include training employees to manage waste properly. Please provide a more extensive narrative. (BE)

Section 2.4.15 Sanitary and Solid Waste Disposal was modified to include a more extensive narrative regarding solid waste disposal.

Section 4.6.4 Buildings, Equipment, Piping, Scrap, Reagents, and Other Materials was added to the text to provide a more extensive narrative regarding waste disposal during reclamation.

1.14 **Posting warning signs**
These signs should be highly visible, easy to read and easily understood. English/Spanish versions should be considered. Signs that become faded and worn should be replaced. Please include information in the plan. (BE)

Information regarding warning signs during reclamation was added in section 4.11 Safety and Site Control.

1.15 **Constructing berms/fences above highwalls**
Define the berm materials and source of the materials. Provide berm design parameters and provide additional information regarding status after operations. Describe where the berms will be located. (BE)

Berms or boulders will be used to restrict access to the quarry slopes. Quarry materials will be used to create rock berms, where feasible. The access to benches no longer being used will also be restricted. Many of the quarry areas will be backfilled, which will eliminate the need for safety berms.

111.2.1 **Reclamation of natural channels**
Explain how reclamation of natural channels will be addressed. (BE)

Section 4.6.5 has been added to the text and describes reclamation of natural channels.

111.2.2 **Erosion & sediment control**
There is indication that monitoring will take place after an extreme storm event. Describe an extreme storm event. Provide narrative on how the erosion control structures will change when reclamation of the channel(s) affected occurs. How will topographic characteristics be addressed to establish a sediment and erosional control system that is in a state of equilibrium. (BE)

Storm event data is presented in Section 2.4.17 Storm Water Management.

Section 4.6.5 Storm Water Controls was added to the text and describes reclamation and post-mining erosion controls.

R647-4-113 – Surety

General Comments: some of these general comments may be addressed within the content of each spreadsheet, therefore, may be repetitive. (BE)

Provide detail regarding the site clean up and trash removal costs. (BE)

General site clean-up costs have been added.

Provide indirect costs such as 10% contingency, 3.2% five-year escalation, contractor overhead and profit of 10%. (BE)

A 10% contingency and a 10% contractor overhead and profit was included in indirect costs on the summary page of the surety calculation. A 3.2% five-year escalation was added to the total direct and indirect costs on the summary page of the surety calculation.

Water truck costs for reclamation are required. (BE)

Water truck costs are included in the topsoil placement/fill combination category in the Production Rates sheet, and water truck rental rates are shown on the Labor-Equip Rates sheet. Mobilization/demobilization costs are included for a water truck.

Show where topsoil placement costs are accounted for. Describe the word 'resoil'. (BE)

The word "resoil" was replaced with "topsoil placement". In the Production Rates sheet of the bond cost estimate, a topsoil placement/fill combination includes four 631E scrapers, a 16H motor grader, and 8,000-gallon water wagon, and a D9R dozer. Topsoil placement costs are included in the Overburden Disposal Areas, Plant Site, and Haul Roads categories.

Surveying costs may be required. (BE)

As per a September 18, 2007 discussion, this comment is not applicable.

Removal and disposal of hazardous materials costs should be Included. (BE)

Transport of waste oil from the site to the Plant as per the current practice at the other Cricket Mountain Project has been included in Spreadsheet E.

Haulage costs should be provided. (BE)

Solid waste, hazardous waste, and hydrocarbon contaminated soils removal costs were added to Spreadsheet E.

Haulage costs for building demolition are included in the RS Means unit costs in Spreadsheet G.

Spreadsheet C indicates there is no contouring in the quarry area. Please provide explanation regarding how the quarry areas blend

Costs for the 11,000-lb hydraulic impact hammer are included in the Production Rates sheet under the Foundation/Concrete Demolition section.

Spreadsheet G, building demolition, does not show costs for dump or recycling. Please provide. (BE)

Rubbish handling costs were added to Spreadsheet E Misc Demo.

Infrastructure cost removal should be included. Examples would be wells, fencing, septic, and storage devices. (BE)

Infrastructure cost removal is included on Spreadsheet E – Miscellaneous. Section A provides infrastructure removal costs for water pipelines, powerlines, substations, diesel fuel and gasoline storage, explosives magazines, and water storage.

Please call me at 1.801.264.6877 if you have any comments concerning these responses.

Sincerely,
Graymont Western U.S., Inc.

Andrew Rupke
Geologist

cc: Bob Robison, Graymont,w/attachment

with the surrounding topography without any contouring. Seeding is shown on 131 acres, and the quarries comprise of 391.7 acres, the Division expects revegetation of the entire area unless a variance is granted. (BE)

The surety calculation does not include contouring costs to blend the quarry areas with surrounding topography because the quarries will be constructed in such a manner as to blend with surrounding topography during operations as indicated in Figure 3.

Seeding will be conducted on approximately 90% of the quarry area because bench faces will not be seeded.

Spreadsheet E references RS Means 2007, please reference the line numbers and page number from Means and which book in all categories. Costs should include revegetation of all the disturbed acreage, but in part B, maintenance is based on 10% of the total acres to be revegetated which indicates only 319 acres are revegetated. The Division requires all disturbed acres to be revegetated. What are the determining factors in selecting maintenance of 10% of the area is required? Please indicate the scrap value, and if there are no removal costs associated with the conveyor. How and who will manage its removal? (BE)

RS Means reference numbers were included for all categories.

Conveyors will be dismantled and salvaged or removed to an off-site landfill or other appropriate disposal site. Costs for dismantling the conveyors are included on Spreadsheet E. Estimated scrap value will not be determined as the scrap value will not be used to offset costs. Dismantled conveyors will be removed from site by the scrap dealer or purchaser on their trucks. Scrap dealers or purchasers will be responsible for the haulage costs.

Revegetation costs are included for the project components in Spreadsheets A, B, and C. The maintenance costs presented in Spreadsheet E are based on the assumption that approximately 10% of the revegetated areas will not exhibit adequate vegetation growth and will require a subsequent seed application to achieve successful vegetation growth. Selection of a 10% maintenance area is based on previous experience at the Cricket Mountain Project.

Spreadsheet F references that average concrete removal costs were calculated on the productivity worksheet. Where is that, that title cannot be located. Explain how these average costs were determined.

The Division does not typically like average costs data. The Division is unclear on the comment under notes on Spreadsheet F that indicates that Means costs are not used because they are for building demolition, when Means does have footing and foundation costs available. Provide the square foot dimension of each of the buildings. Provide additional information about the concrete reinforcement (i.e. spacing, diameter). There is no cost for separating the rebar and recycling it. This must be provided. There are no material haulage and disposal costs, which must be provided. Explain in more detail foundation number 8, misc. items. Is foundation number 1 only approximately 33% larger than foundation number 2? Provide dimensions. (BE)

Concrete demolition costs were determined assuming that concrete would be rubblized with a CAT 385CL excavator and 11,000-lb hydraulic impact hammer. Rubblized concrete will be buried under a two-foot cover, which is accounted for in Spreadsheet B under fill costs.

The dimensions of each of the buildings were added to Spreadsheet G. Estimated concrete foundation volumes were provided by the engineering firm designing the facilities; actual dimensions are subject to change.

Concrete foundations and slabs, including re-bar, will be broken up using a track-hoe-mounted hydraulic hammer or similar methods and buried in place under approximately two feet of material in such a manner to prevent ponding and to allow vegetation growth. Re-bar will be sufficiently buried to prevent a safety hazard. After demolition and salvage operations are complete, the disturbed areas will be covered with growth media and seeded.

In Spreadsheet G, the RS Means demolition costs for buildings include overhead and profit as well as haulage from the site (RS Means Heavy Construction Cost Data 2007, 024116-13-0012).

In Spreadsheet F, item #8 Misc. Items is a contingency for concrete footings volumes that have not been included elsewhere in the cost estimate. Volumes of concrete in the slabs and footings are based on the building dimensions listed in Spreadsheet G. The volume of concrete for the ANFO storage facility slab was revised to more accurately reflect the building dimensions.

There is no cost estimate for using the 11000-lb hydraulic impact hammer. Please provide. (BE)